DEPRAG Adaptive System (DAS)

DEPRAG
machines unlimited

The DEPRAG Adaptive System (DAS) is a patented adaptive flange system for robotic grinding. It stabilizes the grinding contact through active position compensation and real-time force control, ideal for complex contours and component tolerances.

- **Active position compensation with up to 40 mm stroke**
- **Universally applicable for almost all robot types**
- **Precise real-time force control**
- **Designed for demanding grinding and finishing processes**

DAS as an interface between robot and tool

Many grinding processes fail not because of the robot path, but because of unstable contact: tolerances, distortion, or changing contours lead to fluctuating contact pressure and thus uneven material removal. This is precisely where DAS comes in: as an adaptive interface between robot and tool.

As part of DEPRAG's one-stop-shop approach, DAS can be optimally combined with grinding spindles and automation solutions, up to and including a complete grinding cell.

Your advantages with DAS

- **Stable contact force**
  Active compensation of positional and influencing factors for uniform material removal.
- **Improved surface quality**
  Reduces chatter marks, rework, and scrap.
- **Ideal for complex geometries**
  Secure contact even with varying contours and components.
- **Perfect addition to the system**
  Optimally combinable with DEPRAG grinding spindles and DGS.

Technical highlights of the DAS

- Active positional balancing
- Stroke in the range of 0–40 mm
- Real-time piezoelectric force regulation
- Forces in the range of –200 N to +250 N
- EtherCAT-P communication interface („One-Wire-Solution")
- Universal interface for clamping tools
- Quick-change mechanism for robot attachment
- Compatible with KUKA, Fanuc, ABB, Yaskawa, and others.
- Active surface measuring system

DAS for process-reliable robot grinding

The DEPRAG Adaptive System allows the use of any tool according to customer requirements and is suitable for virtually all robot types as well as stationary applications. It actively compensates for deviations and thus stabilizes the grinding process – especially for components with tolerances, varying contours, or sensitive surfaces.

Combined with DEPRAG grinding spindles and system solutions, a perfectly coordinated overall system is created. The advantage: DEPRAG develops and supplies the core components itself, allowing them to be optimally designed for the process and automation. This is a key element of the one-stop-shop principle – right up to the complete grinding cell.

- **Force-controlled grinding**
  for stable processes and reproducible results.
- **Tolerance and contour compensation**
  for complex components and changing conditions.
- **System integration**
  Integration into robot cells and automation solutions is possible.

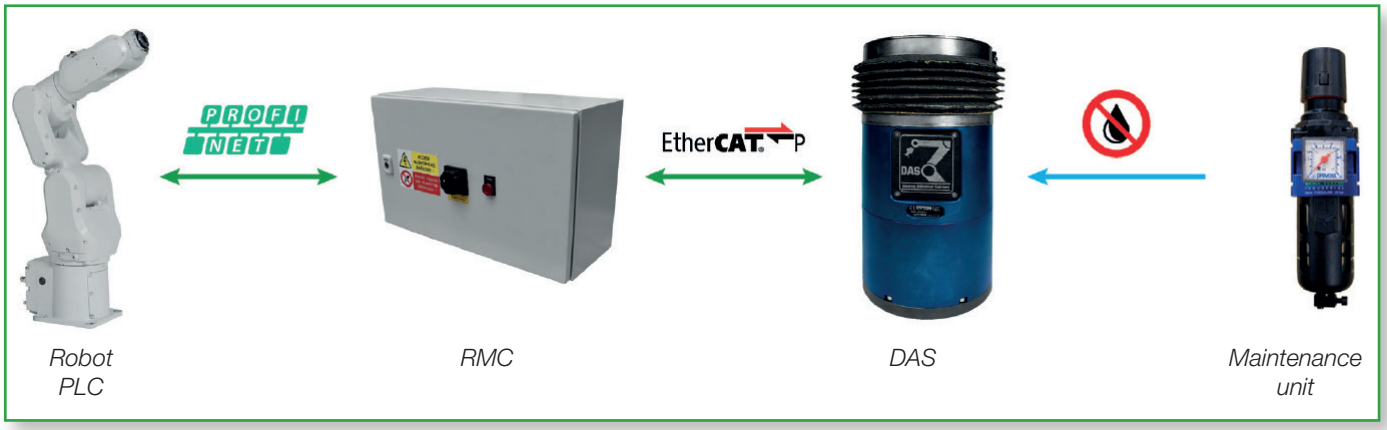
Have the DAS configured for your application
We can assist you with everything from the design of the spindle, tooling, and process control to the complete grinding cell. Let's talk.

Technical data DEPRAG Adaptive System (DAS)				
Robot flange	**Variant**	**DAS Basic**	**DAS Full**	
	Part no.	**6063006E**	**6063006C**	**6063006D**
Pressure at 6 bar, forward movement	N	295	295	295
Pressure at 6 bar, reverse movement	N	247	247	247
Working stroke	mm	40	40	40
Hose diameter	mm	4	4	4
Operating pressure max.	bar	6.3	6.3	6.3
Weight	kg	9	10.5	9
Electronically controlled pressure		no	yes	yes
Internal air duct system		no	yes	no

Available versions of the robot flange

1. DAS Basic 6063006E
   An affordable option without electronically controlled pressure. Suitable for working with constant force without the ability to actively control or measure it.

2. DAS Full 6063006C, 6063006D
   Electronically controlled flange

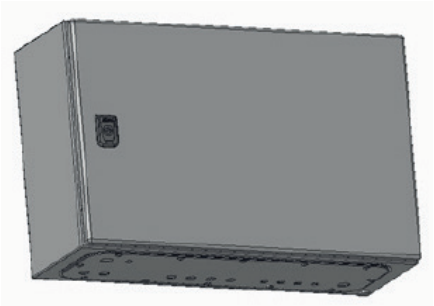


Required accessories suitable for		DAS Full	
		6063006C	6063006D
Electronic control unit	**Type**	**RMC1-100**	**RMC1-100**
	Part no.	6063009A	6063009A
		Technical data RMC1-100:	
		Power supply: 20.4 - 28.8 VDC	
		Power: 1.2 A	
		Energy consumption: 28.8 W	
		EA interface: SUB-D 9-pin (female connector). 3x 3-pin (female connector)	
		Dimension (WxHxD): 600 mm x 380 mm x 210 mm	
		Mounting dimensions: 340 mm x 560 mm	
		Weight: 19.2 kg	
Required accessories for the electronic control unit Software RMC		6029248	

Electronic control unit RMC1-100
The electronic control system manages the sequence controller of the robot flange.

RMC1-100 – Intelligent sequence controller
RMC is the central process control system for DAS adaptive flanges and DGS robotic heads. RMC ensures continuous, precise regulation of the clamping force and enables automatic repositioning of the adaptive flange component or the extendable spindle.

Based on current values, RMC provides precise feedback on the actual force applied or the clamping pressure of the tool and detects potential error conditions early on.



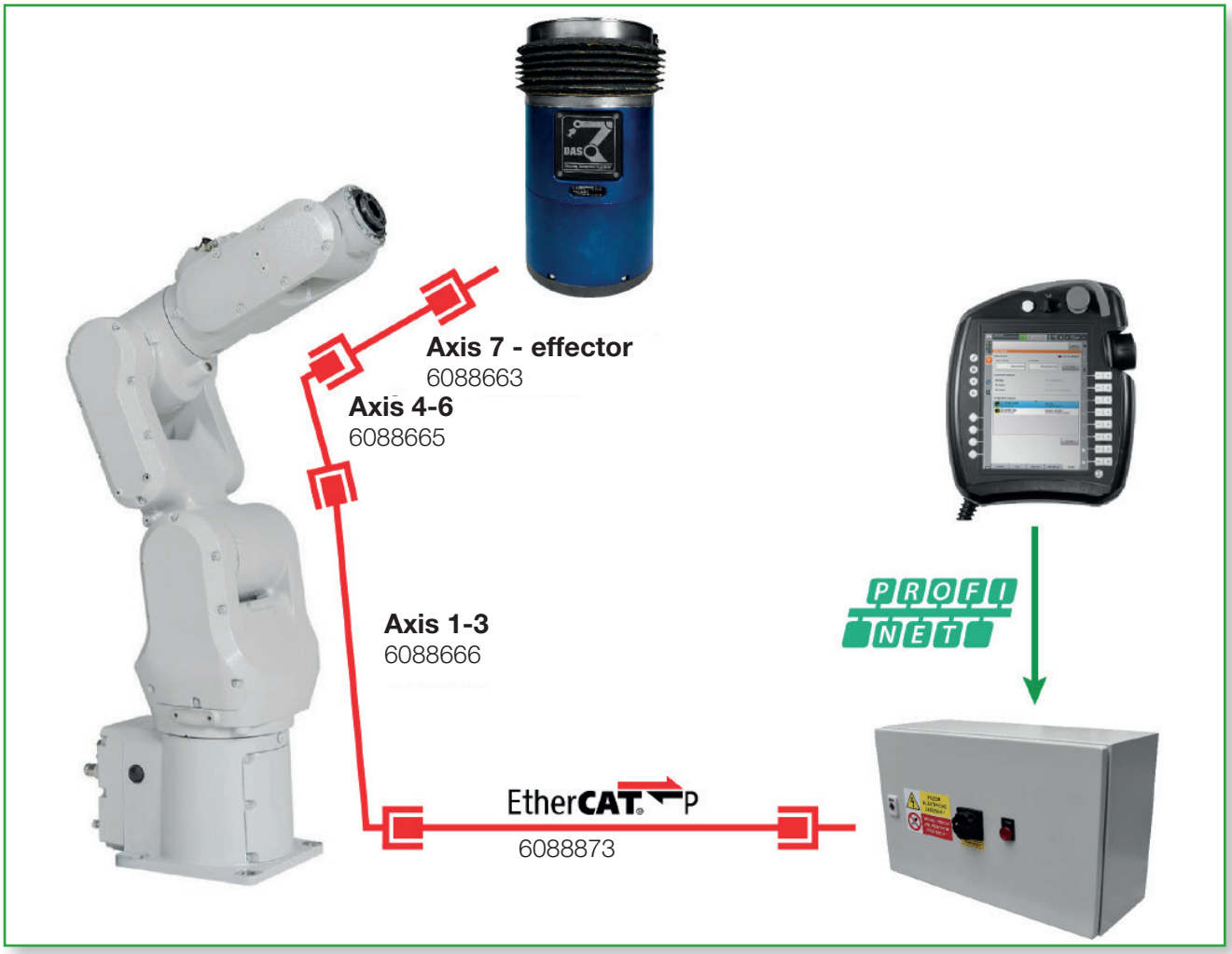
Electronic control unit RMC1-100 6063009A

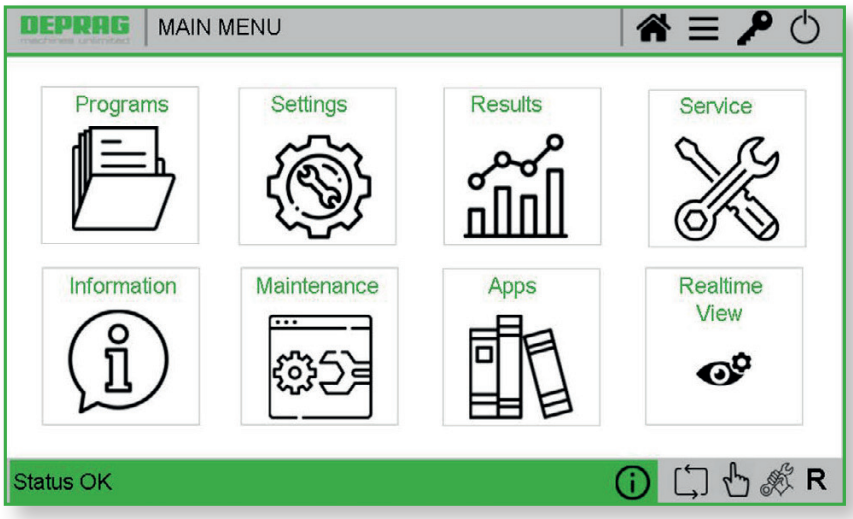
- Reliable communication with adaptive flange and robot head factors
- Continuous and precise control of contact forces
- Real-time information on the position of the compensated spindle section
- Clear display of the current operating status
- Connection to higher-level controllers via ProfiNet, EtherCAT, and others
- Convenient basic setup and adjustment of predefined parameters via the VISUalization Online website (including service and programming menus)
- Automatic weight compensation of the machining tool in various positions and rotational movements

In addition, RMC enables the integration of additional peripheral devices—for example, to control spindle startup or to store sensor calibration values. A particular highlight is the integrated weight compensation for the tool in use, which ensures consistently precise force control regardless of position or orientation.
Thanks to the modular, expandable communication module with EtherCAT-P, the system can be flexibly expanded—for example, by integrating additional system components such as an incremental sensor.

Optional accessories for DEPRAG Adaptive System (DGS)		
Grinding motor 700W	Part no.	6061288A
Grinding motor 1.2 kW	Part no.	6061372A
Grinding motor 2.8 kW (stationary)	Part no.	6061580A
Clamping fixture	Part no.	6024279A
Maintenance unit	Part no.	3029218A
Air connection G3/4 DN16 swiveling	Part no.	6078629

Connection example - Sample cable diagram





Online-HMI – visualization
Independent user interface provided via the sequence controller's internal web server.

The **DEPRAG Adaptive System** allows for the use of any tools according to customer requirements and is suitable for virtually all robot types as well as stationary applications.
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The advantage: DEPRAG develops and supplies the core components itself and can therefore design them optimally for the process and automation.

This is a key component of the one-stop-shop principle—all the way to a complete grinding cell.

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